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should be, upon the doubly periodic nature of the functions. A great many examples and problems are given. The five-place tables at the end of the book and the many reduction and other formulas of integrals in the text give in compact form the material most often needed for reference.

RAYMOND W. BRINK.

THE UNIVERSITY OF MINNESOTA.

NOTES ON NEW BOOKS.

"Isaac Barrow was the first inventor of the infinitesimal calculus; Newton got the main idea of it from Barrow by personal communication; and Leibniz also was in some measure indebted to Barrow's work, obtaining confirmation of his own original ideas, and suggestions for their further development, from the copy of Barrow's book that he purchased in 1673." This is a quotation from the preface to "The geometrical lectures of Isaac Barrow, translated with notes and proofs and a discussion on the advance made therein on the work of his predecessors in the infinitesimal calculus" by J. M. Child, B.A. (Cantab.), B.Sc. (Lond.) The book is No. 3 of the "Open Court Series of Classics of Science and Philosophy." It is published by the Open Court Publishing Company, Chicago and London.

A revised edition of "Plane geometry with problems and applications" by H. E. Slaught and N. J. Lennes has just been published by Allyn and Bacon, Boston and Chicago. Practical applications to everyday life are a feature of the book. Here are two sample ones: (1) "In kicking a goal after a touchdown in the game of football, the ball is brought back into the field at right angles to the line marking the end of the field. The distance between the goal posts being given, and also the point at which the touchdown is made, find by a geometrical construction how far back into the field the ball must be brought in order that the goal posts may subtend the greatest possible angle." (2) "A car wheel is broken, and it is required to determine its diameter by construction when only a fragment of it is given." At the very beginning of the book there are two pages of "reasons why geometry should be studied by those who wish to obtain a generous culture, a broad outlook and a mental development characterized by logical thinking and clear expression." These two pages and the book itself are a good answer to those who are questioning the value of geometry as a subject of study in the high school.

The number of trigonometry textbooks on the market is still increasing. P. Blakiston's Son and Co. of Philadelphia have recently published "Plane trigonometry with tables" by Eugene Henry Barker, head of the department of mathematics of the Polytechnic High School of Los Angeles, California.

The society in England which corresponds to the "Mathematical Association of America" is called the "Mathematical Association." It publishes the *Mathematical Gazette*. One of its past presidents, Professor A. N. Whitehead, has recently published in one volume eight addresses which he has given in recent years on educational, mathematical and scientific topics. They ought to be of especial interest to readers of the MONTHLY because three of them are presidential addresses to the "Mathematical Association." The title of the book is "The organization of thought." It is published by Williams and Norgate, London.

The D. Van Nostrand Company has recently published a book on "Recreations in mathematics," by H. E. Licks. It has chapters on arithmetic, algebra, geometry, trigonometry, analytic geometry, calculus, astronomy and the calendar, mechanics and physics, and an appendix. It is not so extensive as the well-known "Mathematical recreations and essays" by W. W. R. Ball, but it contains considerable material not to be found in that standard work. The eight pages devoted to the cell of the honey bee will be new to many readers.

PROBLEMS FOR SOLUTION.

SEND ALL COMMUNICATIONS ABOUT PROBLEMS TO B. F. FINKEL, Springfield, Mo.

2689. Proposed by E. V. HUNTINGTON, Cambridge, Mass.

Show that the maximum value of

$$y = \frac{\sin x \cos (x + \varphi)}{\cos (x + \theta) \sin (x + \varphi + \theta)}$$

is $y_1 = (\cos\theta - \rho)/(\cos\theta + \rho)$, where $\rho = \sqrt{\sin^2\varphi - \sin^2\theta}$.

This problem was suggested to the proposer by a professor of civil engineering, and has important applications in the theory of conjugate stresses.

Note.—It may facilitate the work to let $\xi = 2x + \varphi + \theta$.

2690. Proposed by E. V. HUNTINGTON, Cambridge, Mass.

Find the maximum value of

$$y = \frac{\sin x \cos (x + \varphi)}{\cos (x + \theta) \sin (x + \beta + \theta)}.$$

2691. Proposed by ROGER A. JOHNSON, Hamline University.

Show by purely geometric methods, without the use of the calculus, that the envelope of all circles whose centers are on a fixed circle and which touch a fixed diameter of that circle is a two-arched epicycloid. (Cf. Calculus problem, 423.)

2692. Proposed by J. L. RILEY, Stephenville, Texas.

A cube is cut at random by a plane, what is the chance that the section is a hexagon?

2693. Proposed by W. F. HARLOW, Portland, Oregon.

A cow is tethered with a rope, length l, to a peg on the opposite side of a wall, height h, the peg being at a distance a from the wall. Find the area over which the cow can graze.

2694. Proposed by N. P. PANDYA, Sojitra, India.

Find the locus of the centroid of a triangle, whose vertex lies on a given parabola, whose base of given length is a segment of a given straight line of unlimited length, and one of whose base angles is known.

2695. Proposed by FRANK IRWIN, University of California.

A positive number, which for convenience we will write as a fraction, a/b, is developed into a continued fraction,

$$a_1 \frac{1}{-\,a_2\,-}\frac{1}{a_3\,-}\cdots,$$